

**Work Order ID 73374**

Wednesday, August 31, 2011 1:10:57 PM

Page 1

Item ID: D350-748-241TRN

Accept

Setup Start

Revision ID:

Stop

Item Name: Crosstube Turning Detail

Start Date: 8/31/2011 Start Qty: 1.00

Required Date: 9/2/2011 Req'd Qty: 1.00

Cust Item ID:

Customer:

Reference:

Approvals:

Process Plan:

Date: 11/08/13

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

Draw Nbr

Revision Nbr

D350-748-241

F

100

MORI SEIKI CNC LATHE LARGE

0.00

Mori Seiki

Memo

0.00

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs on both ends as per Folio FA647  
2-Turn first side as per Folio FA647  
3- File transition lines smooth.

110

QC1- Inspect dimensions to dimension sheet

0.00

QC

Memo

0.00

Quality Control

120

MORI SEIKI CNC LATHE LARGE

0.00

Mori Seiki

Memo

0.00

Mori Seiki CNC Lathe Large

1-Turn second side as per Folio FA647  
2- File transition lines smooth.  
3-Scribe part # as per Dwg D350-748-2411 Ø  
MML 12/01/23

1 Ø

MML 12/01/23

1 Ø

MML 12/01/23

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

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Item ID: D350-748-241TRN

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Start Date: 8/31/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 9/2/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop



| Sequence ID/<br>Work Center ID      | Operation<br>Description                               | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|-------------------------------------|--|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| 130<br><br>QC<br>Quality Control    | QC1- Inspect dimensions to dimension sheet<br><br>Memo | 0.00<br><br>0.00     |         |        |              |               |               |                  |                |
| 140<br><br>QC<br>Quality Control    | QC8- Inspect parts - second check<br><br>Memo          | 0.00<br><br>0.00     |         |        |              |               |               |                  |                |
| 150<br><br>Crosstubes<br>Crosstubes | Large Fab<br><br>Memo<br>Grind machining marks.        | 0.00<br><br>0.00     |         |        |              |               |               |                  |                |

1-φ  
MGM L 12/01/73

DP 12-1-30

RM 12-1-30  
ID

PTO

★ SEE WIO CHG ATTACHED

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
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| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

| W/O: 73374 |      | WORK ORDER CHANGES  |    |      |     |                                     |                          |
|------------|------|---|----|------|-----|-------------------------------------|--------------------------|
| DATE       | STEP | PROCEDURE CHANGE  | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
| 12.03.05   | 151  | DRILL Ø0.188 TOOLING HOLE THRU CUFF. Qty (1) PER CUFF, 2" FROM<br>END OF CUFF. <del>TOOLING</del> <del>HOLE</del> TOOLING HOLES MUST BE PARALLEL WITH<br>HOLE IN OPPOSITE CUFF.<br>SEE ATTACHED DWG |    |      |     | CP<br>12.03.05<br>051042            |                          |
|            |      |   |    |      |     |                                     |                          |

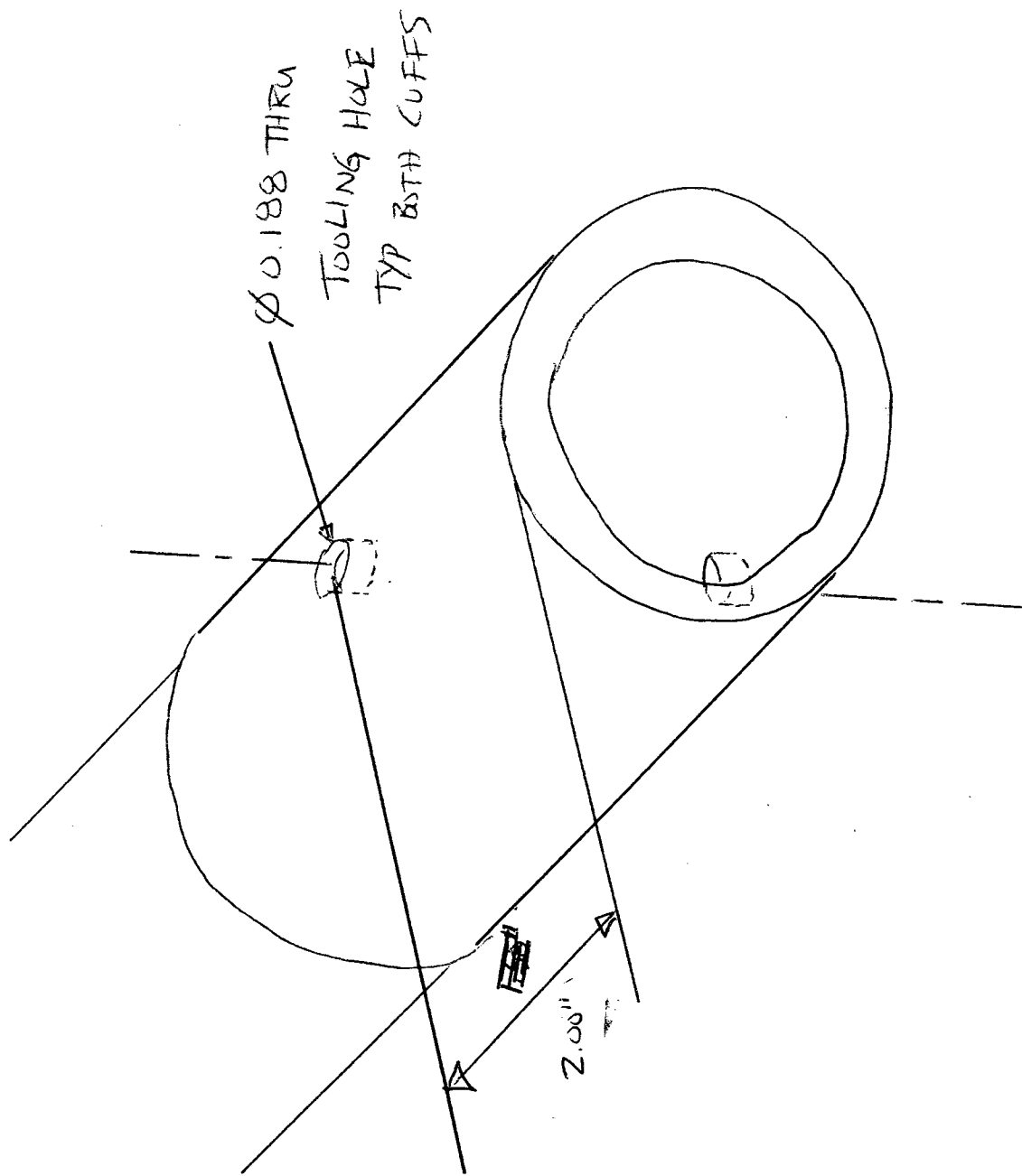
Part No: D350-748-241TRN PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
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|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

Q 12.03.05



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Start Date: 8/31/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 9/2/2011 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

160

Outsource process - Heat Treat

0.00



Outsource1

Memo

0.00

Outsource process - Heat Treat

Issue P/O: 16274 16353  
Heat Treat to min 180 KSI As per Dwg D350-748-241  
Sand Blast tube after Heat Treat  
Possible Supplier: Vac Aero  
Ensure Certificate of Conformity is attached

CS 12102124 ①  
11203-6

170

Receive & Inspect for Damage & Mat'l Certs

0.00



Packaging

Memo

0.00

Packaging

Ensure certificate of conformaty is attached

SPC  
for Cyne 1205-3

180

QC6- Inspect dimensions to drawing

0.00



QC

Memo

0.00

Quality Control

Sidney

POSITIVE RECALL

EFFECTIVE 12.24.02 AUTH W

RELEASED 12.05.03 DATE 9

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



**Work Order ID 73374**

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Item ID: D350-748-241TRN

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Start Date: 8/31/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 9/2/2011 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

190



Packaging

Packaging

0.00

Memo

0.00

Identify and stock in kanban rack  
Location: 81521

1x

SP  
2-5-3

200



QC

QC21 - Final Inspection - Work Order Release

0.00

Memo

0.00

Quality Control

12/5/3

u 170502

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

Wednesday, August 31, 2011 1:10:54 PM

Page 1

[illegible]**Required Date:** 9/2/2011

**Required Qty: 1.00**

**Comments:** IPP Rev:A New Issue 08-03-06 DD verified by:ec  
IPP Rev B Removed polish 08.04.02 EC verified by : DD  
IPP Rev C Removed LPS-3 08.06.23 Ec verified by: DD IPP Rev D  
11.02.24 as per dwg rev.F DD verf: JLM

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
| D6015-125                       |                        | Manufactured  | No          |                     |                  | 120             | Each               | 22.0000        | 1           | 1            |               |                |        |



## Crosstube Material

| <u>Location</u> | <u>Loc Qty</u> | <u>Loc Code</u> |
|-----------------|----------------|-----------------|
| HALL            | 22             |                 |
| 61380           | 22             |                 |

l m.m.l 12/01/12

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
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|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

|   |  |                     |              |
|---|--|---------------------|--------------|
| <b>DART AEROSPACE LTD</b>                                   |  | <b>Work Order:</b>  | 73374        |
| <b>Description:</b> Crosstube Assembly (AS350/355 High Aft) |  | <b>Part Number:</b> | D350-748-241 |
| <b>Inspection Dwg:</b> D350-748-241 Rev: D                  |  | <b>Page 1 of 1</b>  |              |

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

| Inspection Sheet | Drawing Dimension | Tolerance     | Actual Dimension | Accept | Reject | Method of Inspection | Comments |
|------------------|-------------------|---------------|------------------|--------|--------|----------------------|----------|
| SIDE A           | 2.240             | +0.005/-0.000 | 2.245            | /      |        | vern                 | CNC-08   |
|                  | 2.180             | +0.005/-0.000 | 2.185            | /      |        |                      |          |
|                  | 2.180             | +0.005/-0.000 | 2.183            | /      |        |                      |          |
|                  | 2.208             | +0.005/-0.000 | 2.211            | /      |        |                      |          |
|                  | 2.234             | +0.005/-0.000 | 2.238            | /      |        |                      |          |
|                  | 2.253             | +0.005/-0.000 | 2.257            | /      |        |                      |          |
|                  | 2.272             | +0.005/-0.000 | 2.277            | /      |        |                      |          |
|                  | 2.299             | +0.005/-0.000 | 2.303            | /      |        |                      |          |
|                  |                   |               |                  |        |        |                      |          |
|                  | 0.063             | +/-0.010      | .063             | /      |        | vern                 | CNC-08   |
|                  | 4.26              | +/-0.030      | 4.26             | /      |        | "                    |          |
|                  | R0.063            | +/-0.010      | .063             | /      |        | RG                   |          |
|                  | R0.50             | +/-0.030      | .500             | /      |        | "                    |          |
|                  |                   |               |                  |        |        |                      |          |
| SIDE B           | 2.240             | +0.005/-0.000 | 2.245            | /      |        | vern                 | CNC-08   |
|                  | 2.180             | +0.005/-0.000 | 2.185            | /      |        |                      |          |
|                  | 2.180             | +0.005/-0.000 | 2.182            | /      |        |                      |          |
|                  | 2.208             | +0.005/-0.000 | 2.210            | /      |        |                      |          |
|                  | 2.234             | +0.005/-0.000 | 2.237            | /      |        |                      |          |
|                  | 2.253             | +0.005/-0.000 | 2.257            | /      |        |                      |          |
|                  | 2.272             | +0.005/-0.000 | 2.277            | /      |        |                      |          |
|                  | 2.299             | +0.005/-0.000 | 2.303            | /      |        |                      |          |
|                  |                   |               |                  |        |        |                      |          |
|                  | 0.063             | +/-0.010      | .063             | /      |        | vern                 | CNC-08   |
|                  | 4.26              | +/-0.030      | 4.26             | /      |        | "                    |          |
|                  | R0.063            | +/-0.010      | .063             | /      |        | RG                   |          |
|                  | R0.50             | +/-0.030      | .500             | /      |        | "                    |          |
|                  |                   |               |                  |        |        |                      |          |
|                  | 122.70            | +/-0.060      | 122.700          | /      |        | tape                 | WPM-L-02 |

|                     |             |                              |                   |                            |     |
|---------------------|-------------|------------------------------|-------------------|----------------------------|-----|
| <b>Measured by:</b> | WPM         | <b>Audited by:</b>           | DP                | <b>Prototype Approval:</b> | N/A |
| <b>Date:</b>        | 12/01/19    | <b>Date:</b>                 | 12-1-30           | <b>Date:</b>               | N/A |
| <b>Rev</b>          | <b>Date</b> | <b>Change</b>                | <b>Revised by</b> | <b>Approved</b>            |     |
| A                   | 07.01.17    | New Issue (P/O D350-748-201) | KJ/JLM            |                            |     |

Dart Aerospace Ltd

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
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|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

## ULTRA SONIC MEASURMENTS

| Side | LOCATION<br>on tube | R1   | R2   | R3           | R4          |
|------|---------------------|------|------|--------------|-------------|
| A    |                     | .112 | .153 |              |             |
|      |                     | .118 | .162 |              |             |
|      |                     | .134 | .162 |              |             |
|      |                     | .127 | .164 |              |             |
| B    |                     |      |      | .132         | .163        |
|      |                     |      |      | .131         | .176        |
|      |                     |      |      | .112         | .153        |
|      |                     |      |      | .118         | .146        |
|      |                     |      |      | Part number  | 350-748-241 |
|      |                     |      |      | Batch number | 78374       |
|      |                     |      |      | Measured By  | MMIL        |

| Item | Qty<br>-241 | Part Number   | Description                            |
|------|-------------|---------------|--|
| 1    | X           | D350-748-241  | CROSSTUBE ASSEMBLY (AS 350/355 HI AFT) |
| 2    | 1           | D6015-125     | CROSSTUBE (OR D6018-125)               |
| 3    | 2           | D3502-1       | SUPPORT                                |
| 4    | 2           | D2856-400-710 | ABRASION STRIP                         |
| 5    | 1           | AELS-1032-225 | INSERT                                 |
| 6    | 1           | NAS1149D0363J | WASHER (OR AN960JD10)                  |
| 7    | 2           | MS21920-20    | CLAMP (PER DART SPEC. M-MS21920-20)    |
| 8    | 1           | MS27039-1-10  | SCREW                                  |

# **GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6015-125 OR D6018-125  
FINISHED LENGTH = 122.700±0.06
- 2) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2  
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: DART PART NUMBER "D350-748-241" AND BATCH NUMBER ON INSIDE OF CUFF  
PER DART QSI 044 6.4 (VIBRATING STYLUS)
- 7) WEIGHT: 29.85 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.297 HOLE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT ALL EDGES FROM MACHINING  
LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER  
BENDING.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO  
BENDING IS 6% BASED ON O.D.
- 11) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING. ACCEPTABLE TO  
VERIFY TENSILE STRENGTH BY HARDNESS TEST PER ASTM E18 TO 40-45 HRC.
- 12) INSTALL D2856-400-710 ABRASION STRIPS WITH A GAP ON BOTTOM SIDE OF CROSSTUBE,  
CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- 13) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE  
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES,  
NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY.  
CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE  
MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO  
CRACKING/CHIPPING/GROOVES.
- 14) TORQUE CLAMPS 60 TO 80 IN.-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT  
NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
- 15) MAX TWIST AFTER BENDING: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN  
CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.25 (ZN C1-3).

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2011-01-08

|   |   |        |              |
|---|---|--------|--------------|
| F   | ADD HRC TEST OPTION (B8-1) PER PAR 09-040, ADD<br>TWIST LIMIT (A8-1, C1-3), ADD D6015-125 OPTION<br>(C8-1). STOCK DIM NOW MACHINED (D1-4) | CP     | 10.11.23     |
| E   | REVISE GENERAL NOTES; UPDATE TO CURRENT<br>STANDARDS; RELOCATED FLAG #6 PER PAR 08-046<br>(ZN A8-3); ADD TOLERANCES (ZN C6-3, D2-3)       | RF     | 09.09.30     |
| D   | MAG. PARTICLE AND CAD PLATE AS MFD.   | CP     | 06.10.31     |
| C   | ADD CAD PLATING   | CP     | 06.08.14     |
| B   | ADD D6018-125 & PRIME AND PAINT   | CP     | 06.06.30     |
| A   | NEW ISSUE   | CP     | 06.03.31     |
| REV.  | DESCRIPTION   | BY     | DATE         |
| DESIGN  | <i>JP</i>   |        |              |
| DRAWN   | <i>JP</i>   |        |              |
| CHECKED   | <i>JP</i>   |        |              |
| MFG. APPR.  | <i>JP</i>   |        |              |
| APPROVED  | <i>JP</i>   |        |              |
| DE APPR.  | <i>JP</i>   |        |              |
| DATE  | 10.11.23  |        |              |
| <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA  |   |        |              |
| DRAWING NO.<br>D350-748-241   |   | REV. F | SHEET 1 OF 4 |
| TITLE<br>CROSSTUBE (AS 350/355 HI AFT)  |   | SCALE  | NTS          |
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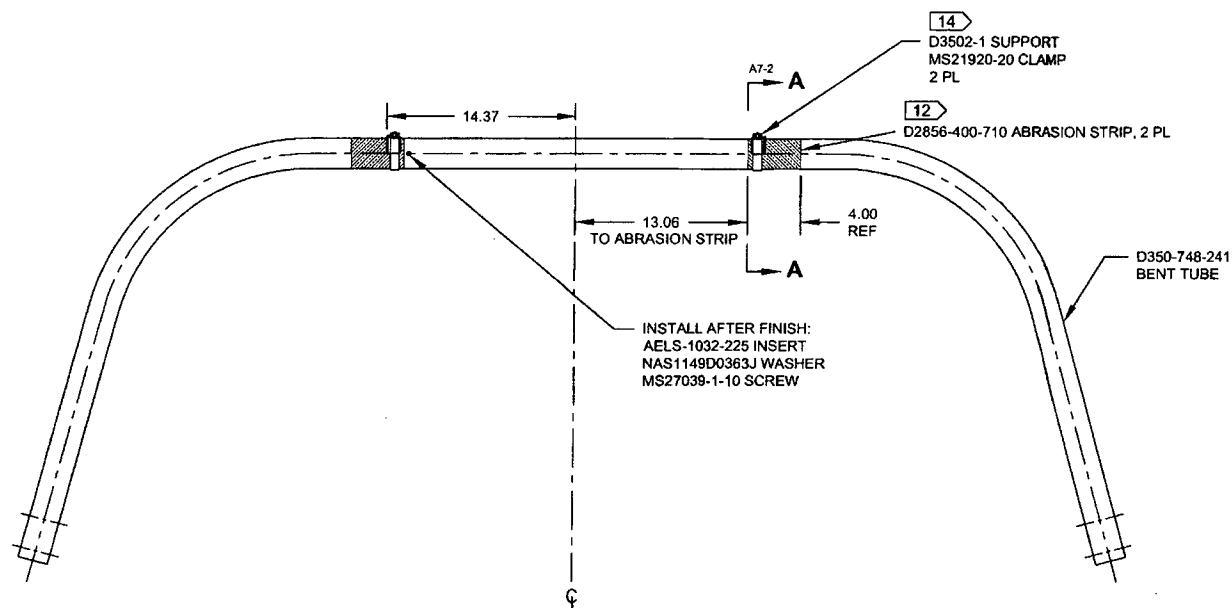
| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

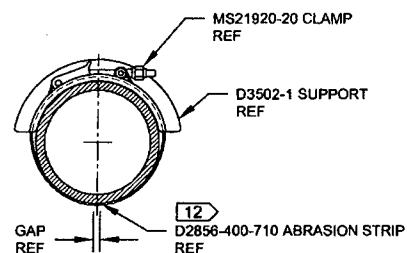
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



**D350-748-241  
ASSEMBLY DETAIL**



**SECTION A-A** D4-2  
SCALE 4X

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R 2011-05 19 D

|            |          |  |              |
|------------|----------|--|--------------|
| DESIGN     | 90       | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA   |              |
| DRAWN      | 90       | DRAWING NO.  | REV. F       |
| CHECKED    | 90       | D350-748-241   | SHEET 2 OF 4 |
| MFG. APPR. | 90       | TITLE  | SCALE        |
| APPROVED   | 90       | CROSSTUBE (AS 350/355 HI AFT)  | NTS          |
| DE APPR.   | 90       | COPYRIGHT © 2006 BY DART AEROSPACE LTD<br>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS<br>NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT<br>WRITTEN PERMISSION FROM DART AEROSPACE LTD. |              |
| DATE       | 10.11.23 |  |              |

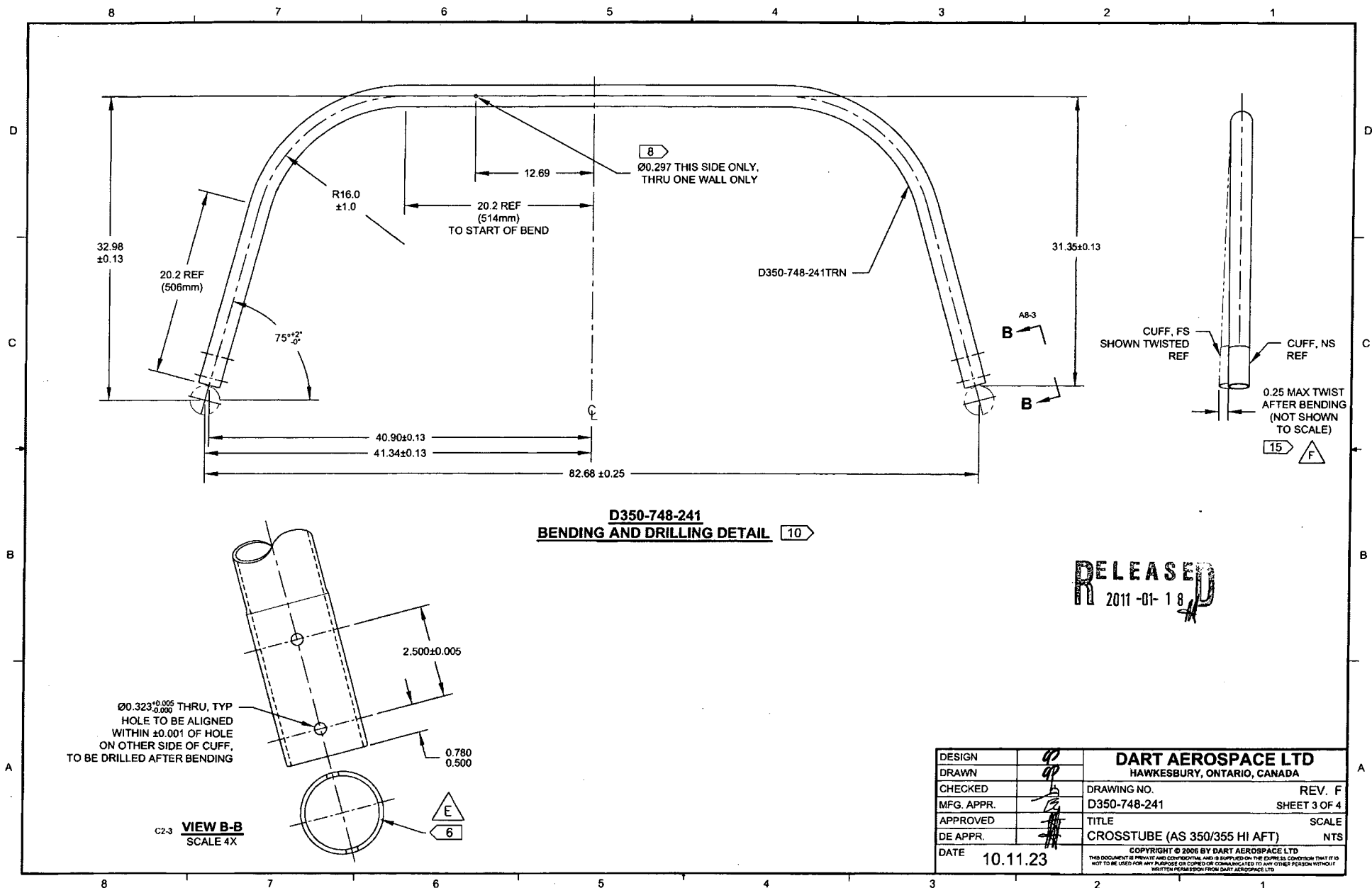
| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
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| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
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Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
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**NOTE:** Date & initial all entries



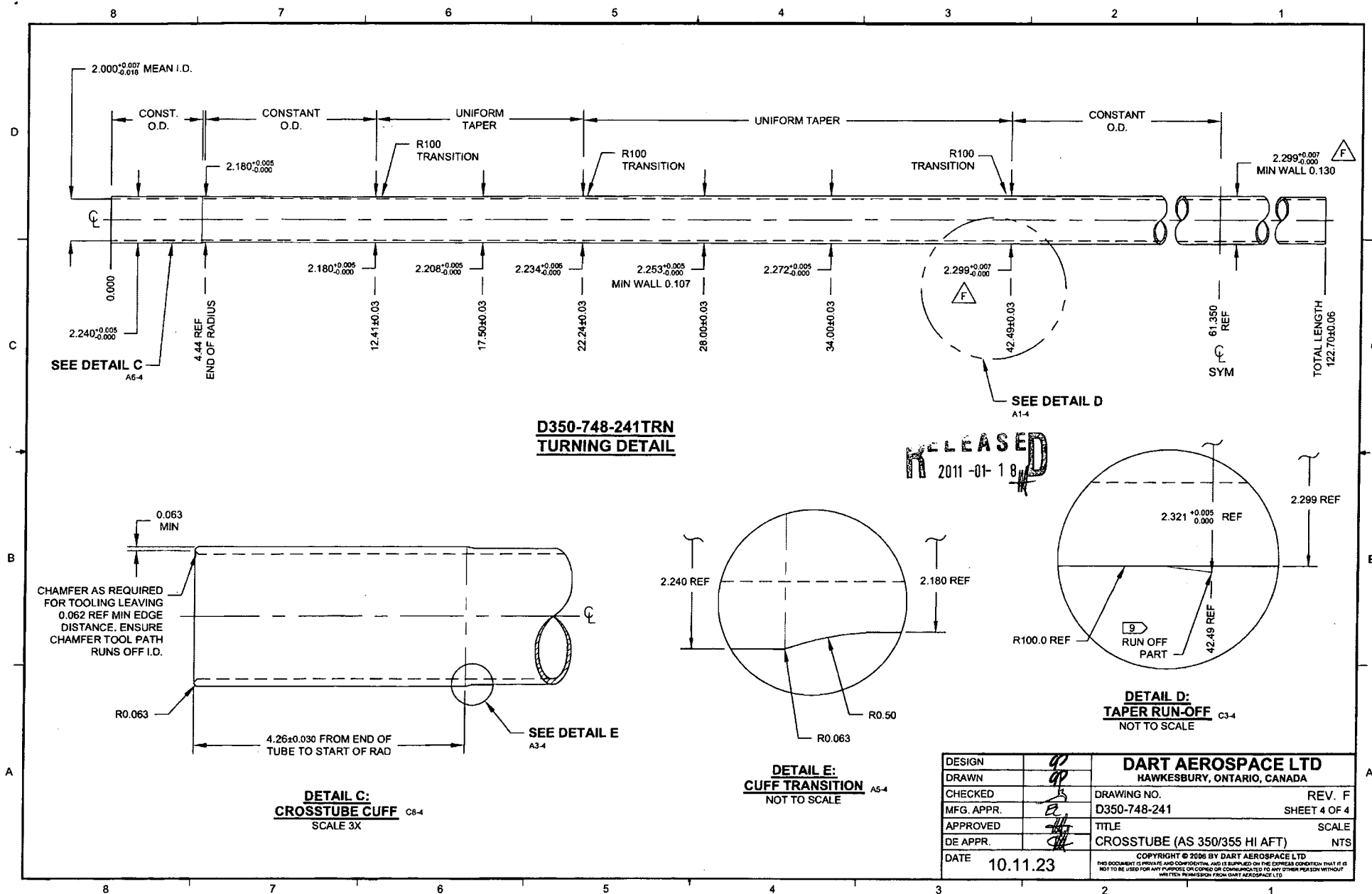
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|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
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Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
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| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
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Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



1000 E. Mermald La., Wyndmoor (Phila.) PA 19038-8093  
Tel. (215) 233-2600 Fax (215) 233-5653

## Certification

### SOLD TO

Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7

March 28, 2012

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|                              |  |
|------------------------------|--|
| <b>Metlab Shop Order No:</b> | 71502  |
| <b>Purchase Order:</b>       | 16386  |
| <b>Description:</b>          | Crosstube  |
| <b>Part No.:</b>             | D350-748-141TRN  |
| <b>Quantity:</b>             | 4 Pieces   |
| <b>Weight:</b>               | 160 Pounds   |
| <b>Material:</b>             | 4130 Alloy Steel   |
| <b>Specifications:</b>       | Harden and temper to 180 KSI minimum ultimate tensile strength<br>IAW MIL-T-6736 |

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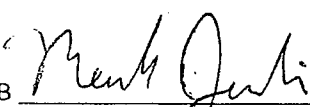
This is to certify that the above parts were processed as indicated above and conform to the specification requirements.

### Results:

Ultimate Tensile Strength: 181/188 KSI\*

\*Converted from 40/41 HRC surface hardness

\*\*Straightness requirement waived by Dart Aerospace Ltd

METLAB   
Quality Representative Mark Jenkins

MERCURY CONTAMINATION: During the heat treating process, testing and inspections, the product did not come in direct contact with mercury or any of its compounds nor with any mercury containing device.



Heat Treating and Metallurgical Consulting





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March 28, 2012

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|                              |  |
|------------------------------|--|
| <b>Metlab Shop Order No:</b> | 71503  |
| <b>Purchase Order:</b>       | 16353  |
| <b>Description:</b>          | Crosstube  |
| <b>Part No.:</b>             | D350-748-141TRN  |
| <b>Quantity:</b>             | 14 Pieces  |
| <b>Weight:</b>               | 730 Pounds   |
| <b>Material:</b>             | 4130 Alloy Steel   |
| <b>Specifications:</b>       | Harden and temper to 180 KSI minimum ultimate tensile strength<br>IAW MIL-T-6736 |

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This is to certify that the above parts were processed as indicated above and conform to the specification requirements.

### Results:

Ultimate Tensile Strength: 181/188 KSI\*

\*Converted from 40/41 HRC surface hardness

\*\*Straightness requirement waived by Dart Aerospace Ltd

METLAB

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MERCURY CONTAMINATION: During the heat treating process, testing and inspections, the product did not come in direct contact with mercury or any of its compounds nor with any mercury containing device.



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